# NEW SPECIES OF *ELEODES* (*BLAPYLIS*) FROM CALIFORNIA AND NORTHWESTERN MEXICO (COLEOPTERA: TENEBRIONIDAE)

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### ABSTRACT

Descriptions are provided for 6 new species, mostly from coniferous forest habitats in montane regions of California and northern Baja California. These new species and  $E.\ caseyi$  Blaisdell share a high degree of similarity in the configuration of the male genitalia, and are here designated as the caseyi species group. Most members of the caseyi group are sympatric with superficially similar species of Eleodes, with which they were formerly confused. Such sympatric pairs always show major differences in male genitalia.

In the last 2 decades only 2 new species of the subgenus *Blapylis* were described (Boddy 1957). Recent efforts have disclosed 11 additional species (Somerby 1972) of which 6 are described here. Most of the new species described below were previously identified as other *Blapylis* species with which they are sympatric. The phenetic similarity between members of such species pairs is often quite striking, but all are readily separated by the configuration of the male genitalia. The genitalia of the species described here are incongruous with all but 2 previously known species of *Blapylis*.

The newly described taxa form a distinct group, designated the *caseyi* species group, after *E. caseyi* Blaisdell. Originally, Blaisdell believed *E. caseyi* to be subgenerically misplaced (Blaisdell 1909:390) because of the genital incongruity. The extreme degree of similarity between members of the *caseyi* species group and sympatric members of other species groups suggests that mimetic relationships may be important in *Blapylis*. To facilitate discussion of such relationships, these species are described here apart from a synopsis of the subgenus. A provisional key to the species of *Blapylis* may be found on pages 264-285 of the 1972 dissertation (Somerby 1972). The key is supplemented here by illustrations of male and female genitalia and photographs depicting shape and sculpturing of the pronota, all important diagnostic features.

The name *Eleodes* is derived from the Greek stem 'elaeo' which means 'an olive' and is feminine. The suffix is derived from the Greek 'odes' which means 'like' and is masculine. According to the code (Stoll et al. 1961:33) "A genus-group name that ends in a Greek or Latin suffix, or in a letter or letters considered as such takes the gender appropriate to its ending." Thus, *Eleodes*, meaning 'olive-like', is masculine. Since the stem of *Eleodes* is feminine most workers including the author of the genus have treated the genus as feminine. In this paper *Eleodes* is treated as masculine.

The species descriptions include 3 ratios: 1) the length of the elytra divided by their greatest width, length measured from last 1/3 of scutellum to tip of elytral apex; 2) the length of the foretibia divided by the length of the pronotum, length of foretibia measured from most proximal point to most distal point (not including the setae along the distal margin), pronotal length measured along middorsal line; 3) the length of the setal pad (as measured along the venter of the probasitarsus) divided by the height of that segment. The preabdominal width of the epipleura is the width of the epipleura at the point where the abdomen joins the thorax.

### Eleodes (Blapylis) triplehorni Somerby and Doyen, new species (Figures 5,22,23)

**Diagnosis.** E. triplehorni is most similar to E. schlingeri, new species, E. cooperi, new species, and E. lariversi, new species. Eleodes triplehorni is separable by having the following features in combination: lateral surface of eyes not convex posteriorly; disc of pronotum and elytra shiny; elytral surface with very slight costal indentation, and punctae sublinear; lateral margins of pronotal disc weakly arcuate (Fig. 5); basal humeral area with elytral surface forming an obtuse angle with the epipleura; plantar surface of probasitarsal segment with a short brush.

Holotype male. CAS Type No. 11,439, La Sanja, Sierra San Pedro Martir, Baja California Norte, Mexico, VI-16-1953, collected by J. P. Figg-Hoblyn. Holotype,

California Academy of Sciences, San Francisco.

Head. Eyes with lateral surface little convex posteriorly, genal process of moderate length; median lobe of mentum rounded, weakly obscuring lateral lobes.

Prothorax. Notum (Fig. 5) 3.4 mm long, 4.6 mm wide; punctae small, moderately deep, tubercles present next to margin; vestiture inconspicuous and not noticeably hispid laterally; shiny surface. Anterior emargination strong, apical angles obtuse; anterior width of pronotum subequal to posterior width; lateral margin slightly arcuate, non-angulate, basal constriction moderately developed; convexity (as seen in cross section) strong with lateral 1/4 slightly deflexed. Hypomeron with punctae not evident, tubercles small and scattered in basal area, vestiture incon-

spicuous on shiny surface. Prosternal process moderately developed.

Elytra. Length 9.7 mm, width 6.0 mm; length to width ratio moderate (1.6). Punctae with moderate diameter and depth present medially to laterally, not coalescing in dorsolateral area; punctae and tubercles in incipient rows, tubercles small with most larger tubercles of same size with little size reduction laterally to medially; vestiture hispid on shiny surface, alutaceous network not evident. Elytra slightly expanded basally; planate from base to disc. Elytral apex oval, weakly sloping. Epipleura 0.84 mm wide at base, with faint shallow punctae and fine tubercles over entire surface; alutaceous network absent; basal width moderately expanded compared to preabdominal width humanal area obtuse humani slightly angled to preabdominal width, humeral area obtuse, humeri slightly angled.

Venter. Abdominal punctae of moderate diameter and depth, tubercles present on 2nd visible sternite; surface shiny. Foreleg in anterior silhouette with distal, ventral surface of femur weakly curved; tibia with proximal, ventral border not constricted; tibial ratio moderate (0.97), ventrodistal surface of probasitarsus not pro-

duced.

Secondary sexual characters. Male with golden tuft of setae on probasitarsus short, ratio 0.37; fine golden setae present in plantar groove of 2nd protarsal segment, present or absent in plantar groove of 1st mesotarsal segment. Paramere, Figs. 22, 23.

Comments. The species is named in honor of Charles A. Triplehorn of Ohio State University. The rarity of examples of the species group to which E. triplehorni belongs and the clear discordance of E. triplehorni from other species justifies its description from a single male. From a dorsal view the paramere has a median groove which is not evident among other, related species (Fig. 22). This is of interest since E. triplehorni is possibly the most primitive member of the subgroup and shares this genital attribute with E. schwarzi Blaisdell.

Eleodes (Blapylis) cooperi Somerby and Doyen, new species (Figures 2, 10, 11, 13)

**Diagnosis.** This species is most easily confused with *E. horni* Blaisdell and *E. fuchsi* Blaisdell. Males are separable from *E. horni* by having a long basitarsal brush; females by having the plantar surface of the probasitarsus uninterrupted by coarse black setae. Males are separable from *E. fuchsi* by paramere shape; females by minor sculpture differences. *Eleodes cooperi* differs from *E. schlingeri*, new species in having shallow small punctae on a matte pronotal disc and rounded humeral area.

Holotype male. CAS Type No. 11,440, Bubbs Creek, Kings River, Fresno County, California, VII-23-1910, collector unknown, from Van Dyke Collection. Exemplar female and 1 female paratype from type locality. Holotype and 1 paratype, California Academy of Sciences, San Francisco; 1 paratype, University of Nevada, Reno. Features of female exemplar which differ from holotype are in parentheses.

Head. Eyes with lateral surface slightly convex posteriorly; genal process of moderate length; median lobe of mentum angular with lateral lobes of mentum ex-

posed (mentum slightly reduced).

**Prothorax.** Notum (Fig. 2) 2.8 mm (2.9 mm) long, 3.7 mm (4.2 mm) wide; punctae small and shallow, tubercles present on lateral 1/3, vestiture inconspicuous and not noticeably hispid laterally; surface matte. Anterior emargination moderate (slight), apical angles rounded; anterior width of pronotum subequal to posterior width; lateral margin arcuate, non-angulate, basal constriction moderately developed; convexity (as seen in cross section) strong (moderate) with lateral 1/4 evenly arcuate. Hypomeron with puncta-like structures not evident, tubercles small to moderate, restricted to basal area; vestiture hispid on submatte surface. Prosternal process weakly developed.

Elytra. Length 8.0 mm (8.5 mm), width 5.4 mm (6.2 mm), length to width ratio moderate, 1.5 (1.4). Moderately large, shallow punctae present medially to laterally, coalescing in dorsolateral area; punctae and tubercles in incipient rows, tubercles minute (small) with most larger tubercles subequal in size with little size reduction laterally to medially; vestiture pilose on matte surface, alutaceous network not evident. Elytra moderately expanded (slightly expanded) basally, plan-



Figures 1-5, pronota of holotypes of *Eleodes (Blapylis)* species: 1, *E. schlingeri*; 2, *E. cooperi*; 3, *E. bishopensis*; 4, *E. spilmani*; 5, *E. triplehorni*.

ate from base to disc. Elytral apex subobtuse (obtuse), gradually (moderately) sloping. Epipleura 0.6 mm (0.7 mm) wide at base, punctae not evident but with fine tubercles sparse to absent basally; alutaceous network absent; basal width moderately expanded compared to preabdominal width, humeral area rounded (without part of basal, lateral surface of epipleura visible from above), humeri rounded.

Venter. Abdomen with small shallow punctae, tubercles present on 2nd visible sternite on a shiny surface. Foreleg (in anterior silhouette) with distal, ventral surface of femur straight; tibia with proximal, ventral border not constricted, long,

ratio 1.11 (moderate, 1.01); distal ventral surface of basitarsus not produced.

Secondary sexual characters. Male with golden tuft of setae on probasitarsus long, ratio 1.0; fine golden setae present in plantar groove of 2nd protarsal segment, and 1st and occasionally 2nd mesotarsal segments. Female with coarse black setae on plantar surface of probasitasus distributed as 2 loosely consolidated lateral rows. Paramere as in Figs. 13, 18; valvifer 2, Figs. 10, 11.

Comments. The species is named in honor of Kenneth W. Cooper, cytologist, geneticist, coleopterist, of the Life Science Department, University of California,

Riverside, for encouragement, criticism, and many valued suggestions.

In having relatively long, slender legs, E. cooperi is similar to E. robinetti Boddy, E. fuchsi, E. schlingeri, and E. lariversi. The legs of E. cooperi are reddish brown rather than black as in all those other species. Examples of E. cooperi were previously determined as E. horni and E. fuchsi.

Ecology and distribution. The examples of E. cooperi were taken from the mountains of Fresno, Madera, Mariposa, Plumas, and Tulare counties, California. Specimen labels indicate that they occur from 2100 m to 3400 m elevation. Examples

were taken in June, July, and August.

Specimens examined. 8 males; 6 females. California: Fresno County, Huntington Lake, Kings Canyon National Park, Bubbs Creek, Kings River, Bull Frog Lake, Kings River, Middle Fork; Madera County, Buck Camp; Mariposa County, Yosemite National Park, Clouds Rest; Plumas County; Tulare County, Sequoia National Park, Alta Peak, Kings Canyon National Park, Mount Mitchell.

### Eleodes (Blapylis) schlingeri Somerby and Doyen, new species (Figures 1, 14, 15, 18, 19)

Diagnosis. On the basis of external characters, this species is difficult to distinguish from E. alticolus Blaisdell. Two differentiating features are very short yet noticeable setae in the central 2/3 of the pronotal disc at 30 × magnification (absent in E. alticolus) and the length of the setal pad of the 2nd protarsal segment of males (slightly longer in E. schlingeri). The holotype has a setal pad ratio (2nd protarsal segment) of 1.08. This is noticeably larger than the same ratio for an exemplar of E. alticolus from Piute Mountain, Kern County, California (0.44) and for an exemplar of E. alticolus from Yosemite, Mariposa County, California (0.65). If the setae on the pronotal disc are worn, females of E. schlingeri are difficult or impossible to separate from those of E. alticolus.

Holotype male, CAS Type No. 11,441, and exemplar female. Giant Forest, Sequoia National Park, Tulare County, California, VII-1-1952, A. Menke, Jr. Holotype male and 19 male, 13 female paratypes from type locality. Holotype and 6 paratypes, California Academy of Sciences, San Francisco; 5 paratypes, Los Angeles County Museum; 15 paratypes, University of Kansas, Lawrence; 4 paratypes, Cornell University, Ithaca, New York; and 2 paratypes, Oregon State University, Corvallis. Features of exemplar female which differ from holotype are in parentheses.

Head. Eyes with lateral surface slightly or not convex posteriorly; genal process of moderate length; median lobe of mentum rounded with lateral lobes of men-

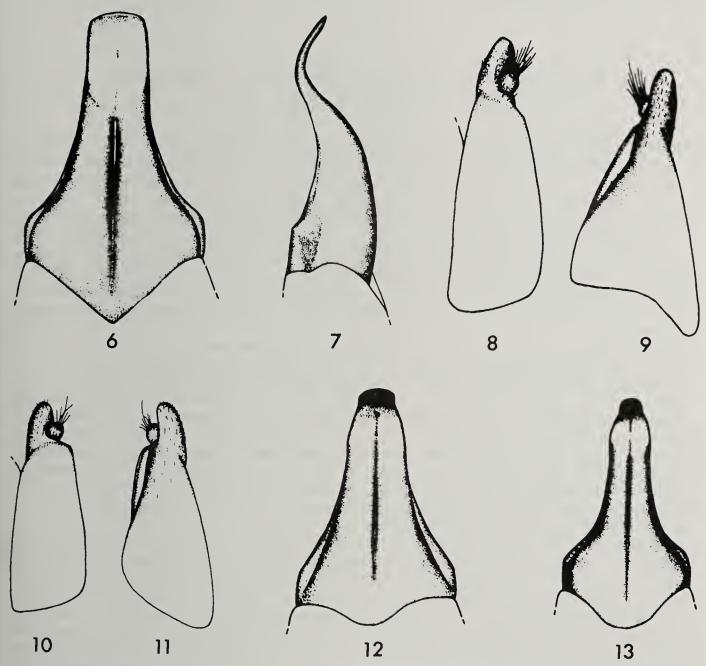
Prothorax. Notum (Fig. 1) 3.2 mm (3.6 mm) long, 4.1 mm (5.2 mm) wide; punctae small and shallow, tubercles present on lateral 1/3, vestiture hispid over entire surface, surface submatte. Anterior emargination moderate, apical angles obtuse; anterior width of pronotum subequal to posterior width; lateral margin arcuate, nonangulate, basal constriction strongly (moderately) developed; convexity (as seen in cross section) moderate with lateral 1/4 slightly deflexed (evenly arcuate). Hypomeron with punctae not evident, tubercles small to moderate, present in basal area, vestiture hispid on submatte surface. Prosternal process moderately developed

(strongly developed).

Elytra. Length 8.3 mm (9.1 mm), width 5.4 mm (6.6 mm), length to width ratio moderate, 1.5 (short, 1.4). Large, shallow punctae present medially to laterally, coalescing in dorsolateral area; punctae and tubercles evenly distributed, tubercles small with little size reduction laterally to medially; vestiture pilose on submatte surface, some alutaceous lines (alutaceous network not evident). Elytra moderately expanded basally (slightly expanded); planate from base to disc. Elytral apex oval (subobtuse), gradually sloped. Epipleura 0.91 mm (1.04 mm) wide at base, with faint shallow punctae and fine tubercles over entire surface; subalutaceous; basal width moderately expanded compared to preabdominal width, humeral area with a near right angle (obtuse angle), humeri strongly angled (slightly angled).

Venter. Abdomen with moderate diameter, shallow punctae, tubercles incipiently present on 2nd visible sternite on a shiny surface. Foreleg in anterior silhouette with distal, ventral surface of femur straight; tibia with proximal, ventral border not constricted, long, ratio 1.06 (moderate, 0.90); distal, ventral surface of probasi-

tarsus not produced.



Figures 6-13, genitalia of species of *Eleodes* (*Blapylis*): 6, 7, *E. spilmani*, holotype, dorsal and lateral aspects of apical portion of aedeagus; 8, 9, *E. bishopensis*, dorsal and lateral aspects of second valvifer of ovipositor; 10, 11, *E. cooperi*, dorsal and ventral aspects of second valvifer; 12, *E. bishopensis*, holotype dorsal aspect of apical portion of aedeagus; 13, *E. cooperi*, holotype, dorsal aspect of apical portion of aedeagus.

**Secondary sexual characters.** Male with setal pad (golden tuft of setae) on probasitarsus very long, ratio 1.46; fine golden setae present in plantar groove of 2nd and 3rd protarsal segments and 1st and 2nd mesotarsal segments. Female with coarse black setae on plantar surface of probasitarsus distributed as 2 loosely consolidated lateral rows. Paramere, Figs. 18, 19; valvifer 2, Figs. 14, 15.

Comments. The species is named in honor of Evert I. Schlinger, dipterist, Uni-

versity of California at Berkeley.

Examples of schlingeri were previously determined as E. fuchsi, E. alticolus, and E. parvicollis Eschscholtz, but E. schlingeri is most similar to E. alticolus, with which it is sympatric. Examples of schlingeri are taken less often than those of E. alticolus. A comparison of the respective parameres (Figs. 18, 19 compared to Figs. 16, 17) clearly shows the considerable divergence between these species.

Ecology and distribution. This species occurs in the mountains of Kern and Tulare counties, California, from 1800 m to 2800 m. Specimens were taken in April

through August.

Specimens examined. 72 males, 46 females. California: Fresno County; Kern County, Alta Sierra, Greenhorn Mountains, Greenhorn Summit; Tulare County, Camp Sierra, Kaweah River, Lemon Cove, Mineral King, Monarch Lake, Sequoia National Park, Alta Meadow, Giant Forest, Halstead Meadow, Round Meadow, Sierra Forest.

# Eleodes (Blapylis) lariversi Somerby and Doyen, **new species** (Figures 20, 21)

**Diagnosis.** This species is most similar to *E. bishopensis*, new species, from which it is separated by having the hypomeron with tubercles of small to moderate size over the entire surface. *Eleodes bishopensis* has large, dense hypomeral tubercles. *Eleodes lariversi* is also similar to *E. schlingeri* from which it is separated by having the elytral humeral area rounded; *E. schlingeri* has the humeri nearly right-angled.

Holotype male, and exemplar female. Trail, Whitney Portal to Mount Whitney, Inyo County, California, 3140 m, July 3-4, 1954, collector unknown, One paratype, San Bernardino County (Koebele Collection). Holotype and 1 paratype, Los Angeles County Museum, California; 1 paratype, California Academy of Sciences, San Francisco. Features of female exemplar which differ from holotype are included in parentheses.

Head. Eyes with lateral surface slightly or not convex posteriorly; genal pro-

cess of moderate length; median lobe of mentum angular and slightly reduced.

**Prothorax.** Notum (as in Fig. 3) 2.8 mm (3.0 mm) long, 3.9 mm (4.0 mm) wide; punctae of average diameter, shallow, tubercles present on lateral 3rd, vestiture hispid over entire surface, surface submatte. Anterior emargination moderate (slight), apical angles obtuse; anterior width of pronotum subequal (slightly reduced) to posterior width; lateral margin slightly arcuate, nonangulate, basal constriction not developed; convexity (as seen in cross section) strong with lateral 1/4 slightly deflexed. Hypomeron with punctae not evident, tubercles small to moderate with tubercles in basal area, vestiture hispid (pilose) on submatte surface. Prosternal process strongly (moderately) developed.

Elytra. Length 7.5 mm (8.3 mm), width 4.5 mm (5.7 mm), length to width ratio moderate, 1.7 (short, 1.4). Moderately large, shallow punctae present medially to laterally (medially to dorsally), coalescing in dorsoslateral area (not coalescing); punctae and tubercles evenly distributed, tubercles small with most larger tubercles of subequal size with little size reduction laterally to medially; vestiture pilose on submatte surface, some alutaceous lines present. Elytra slightly expanded basally; planate from base to disc. Elytra apex oval (subobtuse) moderately sloping. Epipleura 0.52 mm (0.60 mm) wide at base, with faint shallow punctae and fine tubercles; conspicuously alutaceous; basal width subequal to preabdominal width, humeral area rounded (inflated), humeri rounded.

Venter. Abdomen with moderate, shallow punctae, tubercles present on 2nd visible sternite on a shiny surface. Foreleg in anterior silhouette with distal, ventral surface of femur straight; tibia with proximal, ventral border not constricted, long,

ratio 1.15 (moderate, 0.99); distal, ventral surface of probasitarsus not produced.

**Secondary sexual characters.** Male with setal pad (golden tuft of setae) on probasitarsus very long, ratio 1.54; fine golden setae present in plantar groove of 2nd protarsal segment and 1st mesotarsal segment. Female with black setae on plantar surface of probasitarsus distributed as 2 loosely consolidated lateral rows. Paramere as in Figs. 13, 18; valvifer 2, Figs. 20, 21. The apex, linear suture, and base of the paramere in *E. lariversi* are similar to those of *E. cooperi* (13, 18) with the midsection, from a dorsal view, as in Fig. 22, not as constricted as that of *E.cooperi*.

Comments. The species is named in honor of Ira La Rivers, Professor of Biology, University of Nevada, Reno, who has contributed to our understanding of the ecol-

ogy, morphology, and distribution of a number of species of Eleodini.

**Specimens examined.** 2 males, 1 female. California: Inyo County, Whitney Portal to Mount Whitney Trail; San Bernardino County, Koebele Collection.

# Eleodes (Blapylis) bishopensis Somerby and Doyen, new species (Figures 3, 8, 9, 12)

**Diagnosis.** This species is very similar to *E. strumosus* Blaisdell, *E. caseyi*, and *E. spilmani*, new species. It differs in having the pronotal disc lacking noticeable vestiture laterally and with no setae evident medially. The disc usually lacks a basal constriction. The pronotal punctae are smaller medially than in the other 3 species. *E. bishopensis* is also similar to *E. triplehorni*, *E. cooperi*, *E. schlingeri*, and *E. lariversi*; it is easily separated by having large, dense propleural tubercles.

Holotype male, CAS Type No. 11,443, and exemplar female. Bishop, Inyo County, California, VI (no other data), collected by Dr. A. Fenyes. Holotype and 2 paratypes, California Academy of Sciences, San Francisco; and 1 paratype, University of Utah, Salt Lake. Features of exemplar female which differ from holotype are in

parentheses.

Head. Eyes with lateral surface strongly convex anteriorly and posteriorly; genal process of moderate length (short); median lobe of mentum angular with lobe

slightly reduced.

**Prothorax.** Notum (Fig. 3) 2.9 mm (3.0 mm) long, 3.7 mm (4.2 mm) wide; punctae of average (moderate) diameter and moderate depth, tubercles present next to margin, vestiture inconspicuous and not noticeably hispid laterally, surface shiny. Anterior emargination moderate (strong), apical angles obtuse; anterior width of pronotum slightly reduced (reduced) compared to posterior width; lateral margin slightly arcuate (arcuate), non-angulate, basal constriction absent; convexity (as seen in cross section) strong with lateral 1/4 slightly deflexed. Hypomeron with punctae not evident, tubercles large, dense, vestiture hispid on shiny surface. Prosternal

process moderately developed.

Elytra. Length 7.9 mm (8.6 mm), width 4.8 mm (5.6 mm), length to width ratio long, 1.6 (moderate, 1.5). Moderate, shallow punctae present medially to dorsally, not coalescing in dorsolateral area; punctae and tubercles evenly distributed, tubercles moderate (small) with most larger tubercles of subequal size with little size reduction laterally to medially; vestiture pilose on submatte surface with some alutaceous lines. Elytra slightly expanded basally; planate from base to disc. Apex oval (subobtuse), moderately sloping. Epipleura 0.58 mm (0.63 mm) wide at base, with faint shallow punctae and fine tubercles; lacking an alutaceous network. Basal width moderately expanded compared to preabdominal width, humeral area rounded (inflated), humeri slightly angled (rounded).

Venter. Abdomen with moderate, shallow punctae, tubercles incipiently present (absent) on 2nd visible sternite on a shiny surface. Foreleg in anterior silhouette with distal, ventral surface of femur straight; tibia with proximal, ventral border not constricted, moderately long, ratio 0.96 (moderate 0.89); distal, ventral surface of

probasitarsus not produced.

Secondary sexual characters. Male with golden tuft of setae on probasitarsus long, ratio 1.25; fine golden setae present in plantar groove of 2nd protarsal segment and 1st and sometimes 2nd mesotarsal segments.

Female with coarse black setae on plantar surface of probasitarsus distributed as 2 bundles that partially interrupt plantar groove. Paramere as in Figs. 7, 12; valvifer

2, Figs. 8, 9.

Comments. The species is named after the type locality, Bishop, Inyo County,

California.

Examples of this species were previously determined as E. horni fenyesi Blaisdell, and constitute part of the original series used in the description of that subspecies. The holotype of E. horni fenyesi is a small form of E. tenebrosus Horn. Although very similar in shape and size, E. bishopensis and E. tenebrosus differ in the sculpture of the hypomeron (tubercles large, dense in E. bishopensis, small in E. tenebrosus). In addition, the setal brush on the probasitarsal segment is long in E. bishopensis, minute to short in E. tenebrosus. Possibly E. bishopensis is a mimetic associate of E. tenebrosus.

Ecology and distribution. This species occurs along the streamways on the eastside of the Sierra Nevada from Inyo County to San Bernardino County, California. Examples were taken from March through August.

Specimens examined. 26 males, 30 females. California: Inyo County, Bishop, Independence, Lone Pine, Mazourka Canyon, Sage Flat Public Camp; Mono County, Antelope Springs, Benton, Rock Creek; San Bernardino County, Pinyon Flats (not located on a map).

## Eleodes (Blapylis) spilmani Somerby and Doyen new species (Figures 3, 6, 7)

Diagnosis. Eleodes spilmani is most similar to E. cordatus Eschscholtz from which it differs by having the hypomeral tubercles large and close. Eleodes spilmani differs from E. strumosus by having the pronotal vestiture hispid rather than sub-

Holotype male, CAS Type No. 11,444.1. Mendocino National Forest, California, VIII-4-1958, collected by R. Tappin; exemplar female and 4 male paratypes from Trinity County, Peanut, 5 mi. SE, V-21-1973, collected by J. Doyen. Holotype and 1 paratype, California Academy of Sciences, San Francisco; 3 paratypes, University of California at Berkeley; 1 paratype, California State Department of Food and Agriculture, Sacramento. Features of exemplar female which differ from holotype are in parentheses.

Head. Eyes with lateral surface slightly convex posteriorly; genal process of moderate length (long); median lobe of mentum angular, exposing lateral lobes

(median lobe slightly reduced).

Prothorax. Notum (Fig. 4) 3.3 mm (3.0 mm) long, 4.4 mm (4.4 mm) wide; punctae moderate (large), deep, tubercles present on lateral 1/3, vestiture pilose to laterally hispid, shiny surface. Anterior emargination moderate, apical angles obtuse; anterior width of pronotum slightly smaller than posterior width; lateral margin arcuate, non-angulate, basal constriction strongly (moderately) developed; convexity (as seen in cross section) strong with lateral 1/4 slightly deflexed. Hypomeron with punctae not evident, tubercles large-dense, vestiture pilose on shiny surface. Pros-

ternal process moderately developed.

Elytra. Length 8.9 mm (8.8 mm), width 5.9 mm (6.7 mm), length to width ratio moderate, 1.4 (short, 1.3). Moderately large, deep punctae present medially to dorsally, not coalescing in dorsolateral area; punctae and tubercles evenly distributed, tubercles of moderate size with most large tubercles subequal in size with little size reduction laterally to medially; vestiture hispid (pilose) on submatte surface, alutaceous network not evident. Elytra slightly expanded basally; planate from base to disc. Elytral apex oval (subobtuse), moderately strong. Epipleura 0.81 mm (0.82 mm) wide at base, with faint shallow punctae and fine tubercles, lacking alutaceous network; basal width moderately expanded compared to preabdominal width, humeral area obtuse, humeri rounded.

Venter. Abdominal punctae moderate, tubercles present on 2nd visible sternite on a shiny surface. Foreleg in anterior silhouette with distal, ventral surface of femur straight; tibia with proximal, ventral border not constricted, moderate in length,

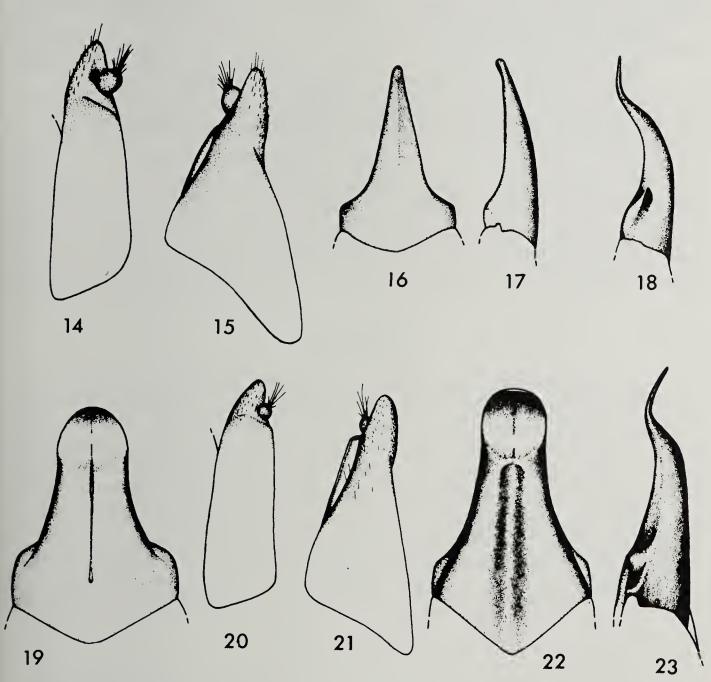
ratio, 0.98 (0.91); distal, ventral surface of basitarsus not produced.

Secondary sexual characters. Male with golden tuft of setae on probasitarsus long, ratio 1.13. Fine golden setae present in plantar groove of 2nd and 3rd protarsal segments and of 1st and 2nd mesotarsal segments. Female with coarse black setae on plantar surface of probasitarsus distributed as 2 bundles that partially interrupt plantar groove. Paramere, Figs. 6, 7; valvifer 2 as in Figs. 8, 9.

**Comments.** The species is named in honor of T.J. Spilman, coleopterist, U.S. Department of Agriculture, who has shown many kindnesses and has helped in many ways.

Ecology and distribution. Examples were taken in May and August.

**Specimens examined.** 5 males, 1 female. California: Trinity County, Peanut, 5 mi. SE, Hayfork; Mendocino National Forest.



Figures 14-23, genitalia of species of *Eleodes* (*Blapylis*): 14, 15, *E. schlingeri*, dorsal and ventral aspects of second valvifer of ovipositor; 16, 17, *E. alticolus*, holotype, dorsal and lateral aspects of apical portion of Aedeagus; 18, 19, *E. schlingeri*, holotype, lateral and dorsal aspects of apical portion of aedeagus; 20, 21, *E. lariversi*, dorsal and ventral aspects of second valvifer; 22, 23, *E. triplehorni*, holotype, dorsal and lateral aspects of apical portion of aedeagus.

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#### LITERATURE CITED

BLAISDELL, F. E. 1909. A monographic revision of the Coleoptera belonging to the tenebrionid tribe Eleodiini inhabiting the United States, Lower California, and adjacent islands. Smith. Instit. U. S. Nat. Mus. Bull. 63:i-xi, 1-524, pl. 1-13.

Boddy, D. W. 1957. New species and subspecies of Tenebrionidae (Coleop-

tera). Pan-Pacific Ent. 33:187-199.

Somerby, R. E. 1972. Systematics of *Eleodes* (*Blapylis*) with a revision of the *Caseyi* group using taximetric methods (Coleoptera: Tenebrionidae). Doctoral Thesis, Univ. of California, Riverside. 441 p.

Stoll, N. R. et al. 1961. International Code of Zoological Nomenclature. International Trust for Zoological Nomenclature, London, 176 p.